A COMPARATIVE STUDY TO DETERMINE THE EFFECTIVENESS OF ORAL SUCROSE FOR PAIN REDUCTION AMONG INFANTS WHO RECEIVE INTRA-MUSCULAR INJECTION IN THE SELECTED PEDIATRIC HOSPITAL IN MADURAI.

A DISSERTATION SUBMITTED TO THE TAMILNADU DR. M. G. R MEDICAL UNIVERSITY, CHENNAI IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

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CERTIFICATE

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INTRODUCTION

INTRODUCTION

“Children are the Heritage & Reward from the Lord”

(Psalm 27:3)

“**Children are the wealth of Tomorrow; take care of them, if you wish to have a strong India ever ready to meet various challenges”**

(J.Nehru)

Children are the inheritance from God. They should be handled with love and care. Healthy children are the greatest resources pride of a nation. Investment in child’s development is an investment in the future of the nation.

Health is a complex phenomenon, the period of growth and development extended throughout the life cycle. However the period in which the principle changes occur is from conception to the end of adolescence. This is the most important period of the growth and development. Children are thought to be healthy and happy. To give them happy and healthy childhood, we must safeguard their total health right from the beginning.

The widely accepted definition of health is **“A state of complete, physical, mental, social well being & not merely the absence of the disease or infirmity”**. In recent years this statement has been amplified to include the ability to lad a socially and economically productive life desire. In his broad definition, health is traditionally assessed by observing mortality and morbidity rates overtime therefore the balance between physical, mental and social

well being, the presence of disease become the prime indicator of health.

"**Pain is whatever the experiencing persons says it is existing whenever he says it does"**

"The infants are developmentally capable of interpreting pain as early as 24-28 weeks of gestation. This documentation was a major turning point in the understanding of infant pain perception and expression"

Pain is an unpleasant experience associated with tissue damage that occurs following a surgical intervention. In hospital the children who are attending the OPD 60% of them are advised to undergo the pain intervention, sources of pain for hospitalized children may occur as a result of painful, procedure , surgery, illness or injury**.**

When tissue damage occur, the distinct types of receptors called **"nociceptors"** are activated, no acceptive impulses travel along nerve fibres from the site of tissue damage to the dorsal horns of the spiral cord where they synapse with T-Cells. The T-cells then transmit the impulses to action systems on the brain on reaching the dorsal horn, pain impulses are modulated before being projected to area of the brain responsible for pain perception and responsible for pain perception and response. When impulses are modified in accordance with other factors, the individual impulse may be increased or decrease.

Excitation and inhibition of impulse result from physiologic and psycho logic mechanism **"Physiologic modulation"** depends on the

diameter of the fiber transmitting the impulse, small diameter fibers nerve an excitatory effect on T-cells, whereas the large diameter fibers inhibit pain impulses close the gate Perception of pain is dependent on anatomic , physiologic and cognitive , behavioral factors. In anatomical factors the fetus nervous system is sufficiently mature by midge station to experience nociception.

An incomplete myelization of nerve fibres prevent infants from fully experiencing pain.It is the ability of the nociceptive system to respond differently to equal amount of tissue damage. Recent research suggests plastically may initiate permanent structural changes in pain pathways. When infants are subjected to repeated painful events without pain relief, The heart rate, respiratory rate, palmar sweating, decreased in vagal tone, decreased Oxygen saturation may wary to the children. “Crying is part of every infant life and these are times when children are too young to complain of pain.

Behaviuoral cues that is facial expression , crying body movement, psysiological indicator of pain can be reliably and validly assessed either along or in combination. The most valid approach is facial expression. Vocalization are an important vehicle for children who are too young to verbalize the pain. Crying is a major mode of communication . Infant cry is divided into three major domains, times, frequency and intensity.

Infants exhibit gross body and limb movements as indicators of many stimuli of pain .It describes general movements of neonates in response to a pin prick noting that the movements intensity during the first month of age. By 6 month, infants exhibit purposeful withdrawal of the body parts, infants also touched or subbed the picked area. Children

are under treatment for pain for a number of complex and interrelated reasons including professional misconceptions about pain in infant and children. For example children do not experience pain with the intensity as adult harcofic analgesic should not be administered to the young children because they will become addicted.

The pain management for newborn babies is more important than for the older children. If the newborn babies are subjected to needle pricks or any other invasive procedure ,there is close monitoring of pain level appropriate to the procedured ,it is necessary to provide bacteriological parameters of appropriate pain reduction treatment.

Treating pain in the infant is essential, because pain can lead to decreased oxygenation, hemodynamic instability or increased intracranial pressure , so provision of effective analgesia for infant and children are important during painful procedure and non pharmacological interventions to reduce fear and anxiety, sense of personal control, distraction technique like administering oral sweat tasting solution, relaxation and massage. So small volumes of sweet tasting solutions, milk or sucking a pacifier reduce pain in infants during procedure. The analgesic effects of sucrose have been reported in term and pre-term, new born infants through recent studies. Studies regarding the analgesic effects of oral sugar, milk or pacifier have used crying as the principle tool to asses pain.

The administration of 2 ml of 75% of sucrose solution by mouth reduce the infant crying time and distress scores after IM injection. Careful assessment of pain and distress during procedure is required to evaluate the effectiveness of sucrose analgesic. Appropriate comfort

measures should be always used and adjacent analgesic should be utilized as required.

There are many theories about neuro physiological mechanism of pain. The common theories are the specificity theory, pattern theory, gate control theory. The gate control theory proposes that the stimulation of fibres that transmit non painful sensation are able to block the transmission of pain impulses through and inhibitory gating mechanism, which is thought to be substantial, gelatinosa, an area on the transmission of pain impulses from the spinal cord to the cerebral cortex can be inhibited or facilitated thus altering pain perception. The main purpose of this work was to evaluate the analgesic properties of oral sucrose during IM Injection for infant.

NEED FOR THE STUDY

A number of studies has shown that orally administered sweet tasting solutions reduce sign of pain during painful procedure. There are multiple techniques available to treat pain in children. Pain treatment however should also include behavioral method, distracting technique, guided imaginary, hypnosis and specific stress reducing counseling are all helpful in the management of pain. A number of behavioral techniques have been found to be very effective in the management of pain in children. This group of technique should be considered essential in any plan for pain management .So by administering sweet tasting solution orally will reduce the sign of pain during painful procedure.

From 108 neonates who were fed with sucrose shows 96.1% decrease pain sensation respectively. The result of this study revealed that

oral sucrose is the safe analgesic agent and is recommended for use in the neonatology ward refer to painful procedure.

Breast feeding, has analgesic effect. It is shortly used before venipuncture and has no major impact on the pain score but has an importance on the crying time. The combination of oral sucrose and breast feeding shows the lowest pain score less than 4 and significantly shorter duration of crying is that 15 minutes.**(GRADIN.M)**

The administration of 2 ml of 75% sucrose solution by mouth reduce the infant crying time and oucher distress score after IM Injection. So sucrose solution at a higher concentration reduce the infant's stress and is safe and clinically useful in this settings**(P.F.LEWINDON)**

The oral sucrose is considered to be very effective among 2-4month old infants .It shows reductions in pain score of two minutes after administration of solution compared with infant in placebo group. The mean pain scored for oral sucrose group return to near baseline of two minutes. So it is effective, easy to administer, short acting analgesic during IM Injection .Sucrose is inexpensive, short acting, non-sedating, easily administered, non-invasive and commercially available. The rapid onset and the absence of long term effects of the analgesia facilitate its use for pain prevention during common procedures.

The researcher from her experience and review of literature felt that the pain as the fifth vital sign which need to be assessed and managed appropriately ,this should be a part of the child's care plan. Hence the researcher decided to assess the effectiveness of oral sucrose for the pain reduction among infants during IM Injection to minimize

child's pain , thereby improving the coping abilities of the children and make the hospital experience as a pleasant one. The findings of the study can be used by nurses to improve the quality of care provided to the children.

Hence the investigator selected this topic to find out the effectiveness of oral sucrose solution in pain reduction before IM Injection among infants.

PROBLEM STATEMENT

A study to determine the effectiveness of oral sucrose for pain reduction among infants who receive intra-muscular injection in the selected pediatric hospital in Madurai.

OBJECTIVES:

- To assess the level of pain after administration of oral sucrose after IM injection among the infants in the experimental group
- To assess the level of pain after administration of IM injection among infants in control group
- To compare the pain scores level between experimental and control group
- To find out the association between pain level and selected demographic variables like age, sex, weight , type of injection, type of feeding in the experimental group
- To find the association between pain level and selected demographic variables such as age, sex, weight, type of injection, type of feeding in the control group

HYPOTHESIS:

- There will be a significant difference between the mean pain score of infants in the experimental and control group
- There will be significant association between pain reduction and selected demographic variables like age, sex, type of IM injection, type of feeding in experimental group
- There will be significant association between pain reduction and selected demographic variables like age, sex, type of IM injection, type of feeding. in control group

OPERATIONAL DEFINITION

PAIN

In this study, pain may be described as a feeling of hurt or strong discomfort after administration of intra-muscular injection or any invasive procedure.

EFFECTIVENESS

In this study, effectiveness is defined in terms of reduction in pain after administering oral sucrose solution.

ORAL SUCROSE

In this study, it is one of the non - pharmacologic systems to produce analgesia in newborn and infants during minor invasive procedure. It is the combination of 30g of purified sugar & 100 ml of water, prepared in a sterile manner with the help of nutritional cup and ounce glass, to prepare oral sucrose solution. From that the 3ml of oral sucrose solution is given orally with the help of palladi and measuring cup.

ASSUMPTION

Selected demographic variables like, age, sex, weight, type of injection, type of feeding may influence the effectiveness of oral sucrose for pain reduction among infants who receive IM injection.

LIMITATION OF THE STUDY

- The study is limited to the infants who receive Intra Muscular Injection except the immunization
- Sample size is limited to 100 infants
- The duration of study is for 6 weeks

PROJECTED OUTCOME

- This study helps to find the effectiveness of oral sucrose solution in pain reduction among infants while administering intra-muscular injection
- The analgesic properties of oral sucrose during IM Injection can be evaluated. Which will enable the nurses to use oral sucrose as a pain reduction measure
- In nursing, this study will emphasize the role of nurse to minimize the pain by administering sucrose solution orally as a pre procedural analgesic before IM Injection and minor invasive procedure in new born and infants

CONCEPTUAL FRAME WORK

The conceptual frame is a group of related ideas statements (or) concept. The term conceptual model is often used interchangeably with concept, frame works and sometimes with grand theories, to articulate a broad range of the significant illation among the concepts of a discipline **(Kozeir beubqa Roas)**

The conceptual frame work of this study is based on Roy's adaptation theory in a nursing career in 1963. The model contains five essential elements. patient the person receiving nursing care, goal of nursing (adopting to change) health direction of nursing activities the recipient of care to be open adaptive system. It reacts as a whole dysfunction in one component affects the entire system.

General system theory is useful in breaking the whole process into sequential tasks to ensure goal realization. Betelanffy explained that the system has 3 major aspects:

INPUT

THROUGHPUT

OUTPUT

INPUT

Inputs is identified as stimuli which can come from the environment or from within a person. Stimuli are classified as focal (immediately confronting the person) contextual (all other stimuli that are present) or residual (non specific). In this study it consists of internal painful stimuli(IM injection) is administered to experimental

and control group of infants .Which includes demographic variables such as age, sex, weight, type of feeding and type of injection.

THROUGHPUT

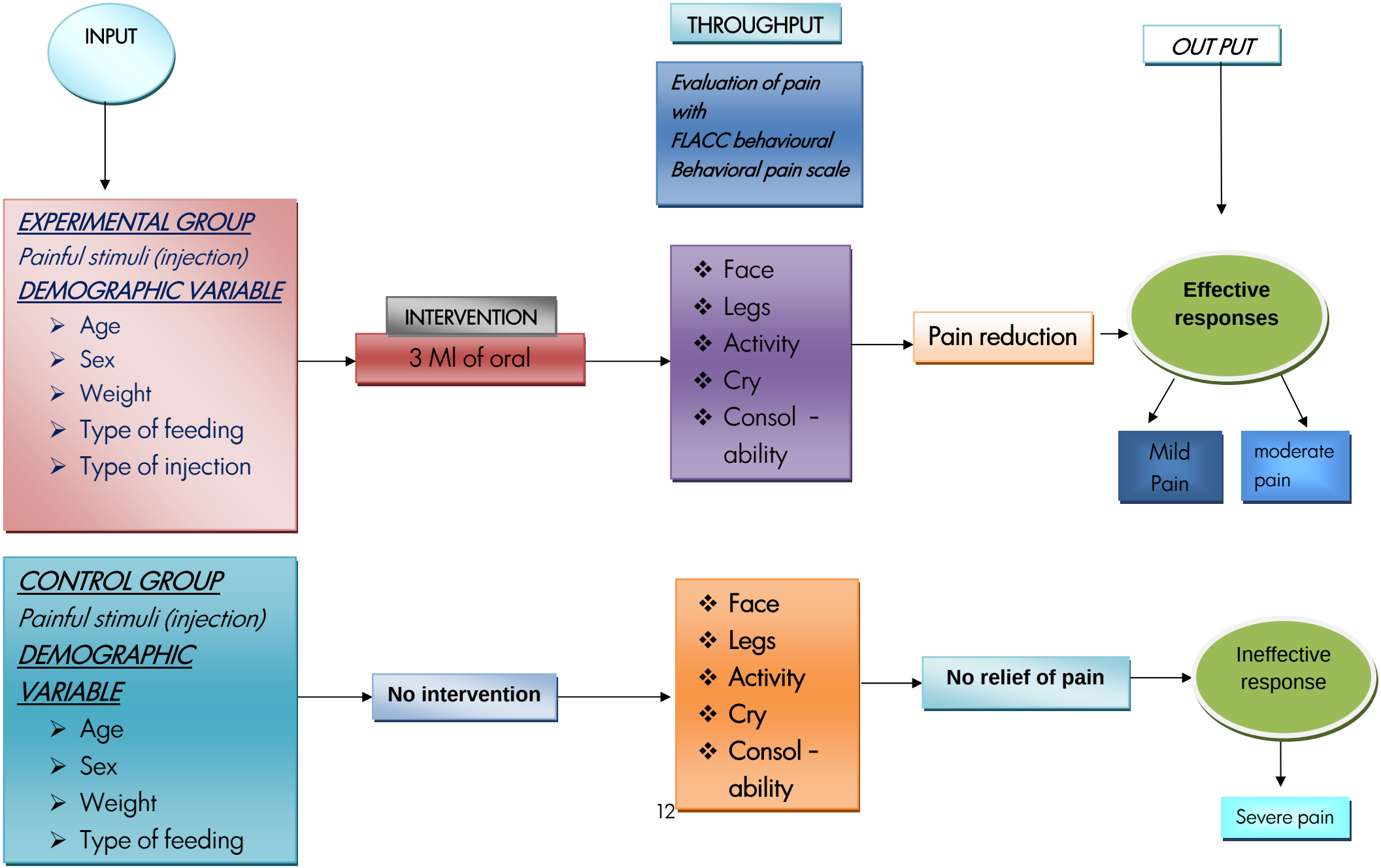
It denotes that the different operational procedures applied in the experimental group. In this study, 3ml of oral sucrose solution is given as a pre procedural intervention for experimental group and no intervention for control group to assess the level of pain.

The pain level is evaluated with the help of FLACC behavioral pain assessment tooled , for experimental and control group .The pain assessment tool includes face(no particular expression or smile ,occasional grimace, frown ,withdrawn or disinterested) crying (no cry ,moans or whimpers, occasional complaints, crying steadily ,screams or sobs ,frequent complaints, legs (normal position or relaxed ,uneasy, restless ,tense ,kicking or legs drawn up) activity (lying quietly, normal position, moves easily, squirming ,shifting back and forth, tense)consol ability(content and relaxed ,reassured by occasional ,touching, hugging, being talked to distractible).

OUTPUT

Output is any information that leaves the system and enters the environment through the system boundries. Output is the outcome of the system. In Roy's system, output is categorized as a adaptive response (or) ineffective responses .Adaptive responses are used when a person demonstrate behaviors, that achieve the goals These response or output provide feed back for the system. In this study, the pain level of infants are evaluated in a standardized tool for both experimental and control group. There is a pain reduction for experimental group and for control group the child experience severe pain.

CONCEPTUAL FRAMEWORK ON ROY'S ADAPTATIONS MODEL



REVIEW OF LITERATURE

REVIEW OF LITERATURE

Researchers generally undertake literature search to familiarize themselves with a knowledge base. A review of related literature is an integral component of any scientific research. It involves a systematic identification, location, scrutiny and summary of written materials that contains information on the research problem. The scope of literature was reviewed from published journals, text books, internet, Medline to widen the understanding of research problem and method for the study.

The review of literature is presented under the following headings.

- Literature related to pain perception in children.
- Studies related to pain phenomenon in children
- Studies related to pain.
- Studies related to management of pain among infants.

LITERATURE RELATED TO PAIN PERCEPTION IN CHILDREN

Pain is not static but dynamic, it is necessary to monitor pain on a regular basis along with other vital signs. Some institutions treat pain as the fifth vital sign. Sources of the pain for hospitalized children may occur as a result of painful procedure, surgery, illness or injury. Thermal, chemical or mechanical stimuli usually cause pain. The energy of these stimuli is converted to electrical energy. The energy conversion is transduction. The transduction begins in the periphery when a pain producing stimulus sends impulses across a sensory peripheral pain serve fiber (nociceptor) initiating an action potential. Once transduction is complete, transmission of the pain impulse begins.

Cellular damage caused by thermal mechanical or chemical stimulus results in the release of excitatory neurotransmitters such as prostaglandins, bradykinin. These pain sensitizing sustains around the pain fibers in the extracellular florid, spreading the pain message and causing an inflammatory response.

Pain has obligatory emotional and cognitive components. They further suggest that pain impulses can be regulated or even blocked by gating mechanism located along the central nervous system. The theory suggests that pain impulses are blocked when the gate is closed. Closing the gate is the basis for pain relief interventions. Gating mechanisms can be found in substantial gelatinous cells within the dorsal horn of the spinal cord, thalamus influence these gates, physiology, emotional, cognitive processes. Pain threshold the point at which a person feels pain is because the amount of circulating substances vary with individual. The response to pain will be different recently N-Methyl, D-asparate receptors have been implicated in the pain experience.

Newborn or infant neurophysiologic systems are too immature to transmit or transport pain impulses. The researches have learned that newborns do perceive pain. Newborn responds to pain with increased sensitivity at birth with whole body movement. Within 3 seconds, of heel lance, the newborn begin to cry 9 cries for several minutes with heart rate of about 50 beats /min. After birth, a large fibers become militated, endogenous pain inhibition develop. As infants develop more motor control they try to pull or roll away resistance. Overall infants response may be influenced by behavioral or emotional reactions.

Behavioral cues like facial expression, crying, body movement, physiological indicator of pain can be reliably and validly assessed either along or in combination. The most valid approach is facial expression. Vocalization are an important vehicle for children who are too young to verbalize the pain. Crying is a major mode of communication of infant .The cry is divided into three major domains, times frequency, intensity.

The degree to which a child focuses attention on pain can influence pain perception. Increased attention has been associated with increased with a diminished pain response. This concept is one that nurses apply in various pain relief interventions such as relaxation, guided imagery and massage.

STUDIES RELATED TO PAIN PHENOMENON IN CHILDREN

Hockenberry and wilon et.al., **(2007)** reported that brain perceives pain, there is a release of inhibitory neurotransmitters to hinder the transmission of pain and helps to produce on analgesic effect. This inhibition of the pain impulse is the fourth phase of the noriceptive process known as modulation. A protective reflex response also occurs with pain receptions. So while assessing pain intensity in children requires special techniques, therefore assessment requires to use word such as owive, boo-boo. There are some unique tools available to measure pain intensity in children.

Herr and. et.al., (2006) expressed that the child is unable to communicate the pain perception. So often the child requires special attention during assessment. Children who are developmentally delayed,

are psychotic, critically ill, dementia are examined with various pain behaviors assessment tools. Although it is important to understand that the pain is measured by using a pain-behavior scale. These tools identify the presence of pain, but not determine the intensity of pain.

Romanelli and Esposito, (2004) The major findings in this study indicates that the chronic pain can leads to early death and decreases in natural killer cell activity an immune response. Neural Plasticity nervous system adapted the perception of pain involving processes such as peripheral and central sensitization. The regenerative neural growth produced path of physiologic pain that leads to some of pain detrimental effects.

Romanelli and Esposito (2004), states that, hyper analgesic result from adaptation in the peripheral nervous system. Three characteristic of sensitization are used in the threshold at which the nerve is activated an enlarged response to noxious thermal (or) chemical stimuli. Ongoing spontaneous activity in the A-delta and C-fibers. Additionally a decreased response to non-noxious mechanical stimuli by A-beta fibers is character by sensitization.

Hockenberry et.al., (2003), assessed the intensity of pain in children .The Child may not know what the word pain means and therefore assessment may require the nurse to use words such as owic, boo-boo. There are some unique tools available to measure pain intensity in children. A “Ouches” which consists of 2 separate scales as 0-100 scale on the left for the younger and on the right for the older children The child merely points to the selection, thus simplifying the task of describing the pain.

Carroll et.al., (1998) Reported that the degree of pain to which a child focuses attention can influence pain perception. Increased attention has been associated with increased pain response. So the nurses have to apply the various pain relief intervention such as relaxation, guided imagenery and massage. etc.

STUDIES RELATED TO PAIN

Dhari Alwugyan et.al (2007), conducted a cross sectional study among 281 Arab speaking children 6-12 years old with acute pain to the emergency room .accompanied by at least one adult, to study the ability of the children to describe, localize and assess the intensity of their evaluation with those of their parents. Data were collected in Almiri, Mubarak, hospitals by interviewing children and by giving a self administered questionnaire to the accompanying adult. Intensity of pain was measured using faces pain scale. Children described their pain by using pain scale. The most frequently used pain scale score shows that severe pain with hurts a lot followed by a burning sensation. The most common sites of pain were abdomen, pelvis. Intensity of pain was associated with birth order and higher members of sibling's and lower number of previous pain episode, lower family income and lower education level of mother. No relationship was found between self-reported pain intensity and nationality area of residence, gender or father educational level. There was no agreement in pain intensity between parents and children.

Lara J. Spagrud.et.al (2003)conducted a study that suggested that the face pain scale revise, is a useful self report tool for assessing pain intensity in preschool and school age children who may not be able

to use other pediatric self report pain measurement tools. Such as visual analog or numeric rating scales.

Kaye Spence.et.al , (2003) conducted a study on 144 preterm and term infants on ventilator and those who had undergone surgery. The FLACC behavioral pain assessment tool was used to assess the level of pain for term and preterm infants .The scores of the tool were valid reliable. He also suggested that the FLACC behavioral pain assessment tool could be used for all infants nursed in NICU.

Jacqueline A Ellis ,(2002) conducted a study to provide baseline description of the prevalence of pain and pain management strategies in pediatric hospital and to complete the prevalence reports in the literature 237children ranging in age from 10 days to 17 years and 223 parents participated in and the survey on 5 inpatients units. The results suggested that more than 20% of the children had clinically significant pain at scores of 5/10 or greater for the majority of the study. At least 50% of the children were found to be pain free during 4 intervals and there was high level of agreement between parents and children pain intensity ratings. One hundred and fifty seven children have medicated as ordered and 80 children had no analgesics ordered. There was no significant correlation between the characteristics of the parents and the amount or types of meditation given.

Malviya, (2001) conducted a comparative study on pain assessment and management practices on children with or without cognitive impairment undergoing spine fusion surgery. The medical records of 42 children were reviewed and data related to demographic surgery, pain assessment and management and scale effects were

recorded. The result revealed that fewer compared to those without Cognitive Impairment P < 0.0002 self report was used for 81% of pain assessment in cognitively impaired children. Children with Cognitive Impairment received smaller total opoiod doses on POD 1-3 compared to those with (Cognitive Impairment P< or -0.02) further more children with Cognitive Impairment received patient nurse controlled , that there is a discrepancy in pain management practices in children with and without Cognitive Impairment following spine fusion.

Mather, (2000) study brought to light that the pain assessment and management in children were more effective, when the children were administered a non narcotic to a narcotic analgesic as little as possible, instead of whenever necessary. The scale used to determine the post operative pain was visual analog scale

Cheryl. A. Gilbert et.al, (1999) determined the pain level based on facial expression would be useful in assessment of post-operative pain in young children between the age 13-74 months are video-taped for a maximum of an hour, after arrival in the post-anesthetic care unit at British Columbia children hospital. Samples were randomly selected from each 2 minutes of time period lapsed during the hour following surgery. The result demonstrated that the face scale server as a valid measurement tool for persistent pain in children

Bough Lon et.al , (1998) conducted a study to determine whether the regular assessment of children's pain would improve their pain management and Postoperative progress among children .Children (n=36) pain were measured every 4 hours post operatively, by using Wong baker faces rating scales. The Outcomes is based on the amount of analgesics

given. The result subscribe the pain reports time and progress of ambulation and length of hospital stay were compared with data from a retrospective chart review of control group. The sample size was no statistically significant differences, in these variables were found an important clinical findings were that despite all children prescribed PRN analgesics orders.

One fourth number of the children received no pain relief intervention. Also another one fourth number of children stated that their pain control was only partially effective. Pain management in children are highlighted to a need and for the improvement of nursing practice, clinical significance was achieved in terms of staff learning of the research process and awareness of pediatric pain management practices and inter agency of sharing resources

STUDIES RELATED TO MANAGEMENT OF PAIN

Hatfield.LA. Scholarsh (2008) A study was done to evaluate the effectiveness and age related changes in analgesia of oral sucrose as a pre procedural intervention during routine immunization in infants at 2 and 4 month of age .The university of Wisconsin children's hospital pain scale done a repeated measures of ANOVA values .It was used to examine the pain score between group difference and within subject variability. The effects of treatment on behavioral pain score in 40 healthy term infants. Infants received oral sucrose 24% (n=20) showed a significant reduction in behavioral pain response 5 minutes after administration compared to those in the placebo group (n=20).At 2 minutes following solution administration, both sucrose and sterile water showed the highest mean pain score(4.54 and 4.39 respectively)indicating a severe pain .At 5

minutes the sucrose group returned to near normal at 0.27 , while placebo group remained at 3.02. It indicating a percentage in mean score relative to sterile water. Pain score of 90.9 .No statistically significant age related, change in behavioral pain response was noted between 2 to 4 month. Old infants at 2 and 5 minutes following treatment and administration. Finally they concluded that sucrose is an effective pre procedural intervention for decreasing behavioral pain response in infants after immunization.

Codiopietrol.et.al,(2008) A study was conducted to compare the efficacy of breast feeding versus orally administered sucrose solution in reducing pain response during blood sampling through heel lance. They collected samples by open label randomized method of 101 term neonates undergoing heel lance for routine screening of congenital disorders. In Italy they assigned to breast feeding and 1 ml of 25% sucrose solution with the help of multidimensional acute pain rating scale, they assess the 02 saturation, crying behavior, duration of samplled .The median premature infant pain profile score was lower in the breast feeding group(3.0) than sucrose group(8,5).So this study suggests that the breast feeding provide superior analgesia for heel lance compared with oral sucrose in term neonates.

Taddio.A.et.al,(2008) did a study on effectiveness of sucrose analgesia in new born undergoing painful medical procedure .They included new born(>or=36 weeks gestation) of diabetic mother and non diabetic mothers to assess the pain during IM injection , venipucture and 3 heel lance. The mean pain score was lower among new born who received sucrose than among those who received a placebo (mean difference –1.3, 95%, confident interval (CI)-2.0 to =0.6).There they found a modest reduction of pain in newborn of diabetic mother and non

diabetic mothers, when sucrose was used for all medical procedures performed in the first 2 days after birth.

Savfer.S,(2007) This study to examine and compare the analgesic effects of breast feeding and sucrose solution in reducing pain due to venipuncture in term neonate. So the study selected 102 infants requiring screening of Phenyl ketonuria(n=26)and hyper bilirubinemia (n=76) along with control group , then the oxygen saturation and length of crying are noted .The crying time was shorter for both sucrose and breast feeding than the control group .

Schechter ML.et.al , (2007)conducted a study to assess the pain reduction during immunization among 18 to 36 month old children. A Distraction technique was used and findings vary with age, temperament and interest of the child .One method is sucrose administration. This solution is instilled directly into the mouth or administered on a pacifier. The ouches scale was used to assess the pain level. Thus oral sucrose reduces the evidence of distress reliability in children 6 months of age and should be used routinely.

Okan.F.et.al, (2007) conducted a study to compare the effects of sucrose and glucose in preterm infants. 20% sucrose and 20% glucose (or) placebo was administered to the children .After the time of heel prick of both the sucrose and glucose groups, the duration of first cry and total crying time was noted. It significantly reduced the pain for sucrose group (p=0.005, p=0.007).When placebo (p=0.009) at 4.5 minutes higher .It shows sucrose is highly significance.

Lefrak.l.et.al ,(2006) The objective of this study was to review the use of oral sucrose for procedural pain managements in NICU. It develops potentially better practice guidelines. A collaboration of 12 centers of the Vermont oxford network worked together to review the strength of evidence, dosage, administration, for the use of sucrose analgesia as the basis of potentially better practice for sucrose analgesic. Through reviews and inputs consensus were reached and guidelines that included indication, dosage, age related dosage over 24 hours were developed.

Lesli.et.al, (2006) stated that, non-pharmacological methods are effective in reducing the signs of pain during pain procedures. Oral sucrose and pacifiers reduces pain scores, during procedures. The other simple measures such as, tucking and skin to skin contact, that might also be effective to reduce pain. So the nurse has to organizing the care to reduce exposure to painful procedures and also optimizing the devices used for procedures, might reduce the experience of pain.

Duhn.L.J.et.al ,(2004) study was done to examine the issue of pain assessment in infants by acquiring all available published pain assessment tools. 35 neonatal pain assessment tools were found and evaluated by using predetermined criteria and tested and reports of reliability, validity, clinical utility and feasibility. They concluded that, for selection of pain assessment tool the decision should be made carefully, that the instrument will assess pain in a reproducible way is essential and must be demonstrated with validity and reliability testing. Because of pain a multi dimensional pain score may be preferable. So there is a careful assessment of pain is necessary.

Akoam.m, (2004) study to compare the effectiveness of oral fructose with glucose and sterile water. Fructose solution for pain relief was tried during hell lancing and to compare the effect with glucose and placebo. In total, healthy full term neonates were studied. Each infant assessed for 3 times, receiving 0.5 ml of 30% fructose, 0.5 ml of glucose or 0.5 ml of sterile water orally by syringe, before heel lancing. The pain score is lower in 30% fructose solution has an equal analysis effects with 0.5 ml of 30 % glucose solution.

Carol.v.al, (2001) study was to assess difference in sound spectra of crying of term newborn in relation to different pain level. Sample size was 57 neonates .They were evaluated during heel prick performed with different analgesic technique. Three features were considered and correlated with the corresponding DAN scores. 1) what spectral form 2) the fundamental frequency of the first cry emitted (Fo) foot mean squares sound pressure normalized. To its maximum. After emission of there first cry babies with DAN score, 58 .but not wish DAN score < 8 (L0.001) showed a patter stretchy characterized by a sequence of almost identical cries with a period or the older of Ls. An alarm three hold exist between high >8 and less <8 DAN scores crying has different facture in these 2 groups. When pain exceeds, a DAN Score of 8 is usually a first at high pitch is emitted followed by the cry with a sound level maintained.

Ramenghilt.et.al ,(1999) stated that, sucrose analgesia is a absorptive mechanism or taste perception. It is clear that the “Sucrose Analgesia” is related to a pre or post absorptive mechanism in the body to reduce the pain perception .In this study, sucrose reduced the pain response of preterm infants, who exposed to heel prick collect blood samples when it was administered in to the mouth, it was ineffective when administered through intra gastrically.

METHODOLOGY

RESERCH METHODOLOGY

Research methodology is a way to systematically solve the research problem. It consists of the various steps generally adopted by a researcher in studying the problem along with the logic behind them **(Kothari 1990).** It indicates the general pattern to gather empirical data for the problem under investigation.

This chapter comprises the methodology for the study, the research approach design for the study setting, sample, technique of data collection, the pilot study and plan for analysis of the data, and protection of human subjects.

The study is designed to determine the effectiveness of oral sucrose for pain reduction among infants who receive intramuscular injection in the select pediatric hospital in Madurai.

RESEARCH APPROACH

The purpose of the study is to determine the effectiveness of oral sucrose for pain reduction among infants who receive intramuscular injection. Therefore quantitative approach is adopted in this study.

RESEARCH DESIGN

Research design is a set of logical steps taken by the researcher to assess the research problem. The design depends upon the levels of

inquiry of the research and determines the methods used to obtain sample collection, data analyze and interpret results **(Roberts & Brueu 1989).**

A quasi – experimental research design was used to evaluate the effectiveness of oral sucrose in pain reduction before IM injection among infants by using post test only control group design is used .

- x o_1 - Experimental group
- - o_2 - Control group

EXPERIMENTAL GROUP

-	x	o_1
Pretest	Intervention	Post –Test

CONTROL GROUP

-	-	o_2
Pretest	no Intervention	Post –Test

SETTING OF THE STUDY

The setting of the study is Navamani Prabakar Pediatric Hospital near Arasaradi in Madurai , which is a 50 bedded hospital with separate rooms, general wards ,OPD, lab , pharmacy, operation theatre ,**NICU** and **PICU**. The general room consists of 10 beds, each general room consists of 5 beds **,** **NICU** consists of 5 beds , lab , pharmacy, operation theatre are having all facilities and the census of the OPD is nearly 150 patients per day ; among this, around 90 children's are infants with minor illness and for immunization , daily 25-30 beds are occupied for minor and major illness of the children.

POPULATION

According to Polit and Hungler (1999) “Population refers to the entire aggregation of cases that meets designated criteria”. The requirement of defining a population for a research project arises from the need to specify the group to which the study can be applied. The target population in the present study include infants aged 0-1 Years, who receive IM injection except Immunization

SAMPLE SIZE

The sample size consists of total 100 infants. Among that 50 infants were in experimental group, 50 infants were in control group, who visit OPD and infants who receive IM injection except immunization were selected as study samples.

SAMPLING TECHNIQUE

In Navamani Hospital about 150 Children visit OPD daily, out of which 100 sample were taken by using the purposive sampling for the study.

CRITERIA FOR SAMPLE SELECTION:-

INCLUSION CRITERIA :-

- Mother who are giving concern to participate in this study
- Infant who receive only Intra – Muscular Injection
- Infant who is admitted or visiting out - patient department

EXCLUSION CRITERIA

- Mothers who are not willing to participate
- Infants who receives immunization and intravenous.
- Infants who receive oral Polio vaccine
- Infants who are critically ill

SELECTION & DEVELOPMENT OF TOOL

The tool is a written device that a researcher uses to collect the data. After a careful review of literature, the investigator identified a standardized tool to assess the pain which is called FLACC behavior pain assessment scale. However the demographic data were collected by a developed one.

DESCRIPTION OF THE TOOL

The study tool consists of two sections

Sec I :- Demographic variables

Sec II:- FLACC behavioral pain assessment scale

SECTION I

The first part of the instrument demographic data consisted of questions related to demographic variables (Such as age, sex, weight, type of injection, types of feeding like exclusive breast feeding , artificial feed ,weaning food)

SECTION II :-

FLACC BEHAVIORAL PAIN ASSESSMENT SCALE

FLACC Behaviors pain assessment scale to assess the level of pain in infant the acronym FLACC represents five categories Face, Legs, Activity, Cry and Consol ability. The pain was assessed using observation method responses in each category scored between 0 and 2 for a maximum total score of 10

SCORING PROCEDURE

0-3 Mild
4-6 Moderate
7-10 Severe is used to assess the level of pain

TESTING OF TOOL :- CONTENT VALIDITY

Polit (1999) says that validity refers to the degree to which instrument measures what it is supposed to be measuring. Three types of validity are, content, criterion and construct.

Since the tool adopted for this study is a standardized tool **(FLACC)** behavioral pain scale content validity established by submitting the tool 5 experts in the related field. As for as adequacy of content all experts approved the tool constructed.

RELIABILITY

Reliability refers to the accuracy and consistency of the measuring tool. The test retest method was used to establish the reliability of structured tool (FLACC) The reliability Co- efficient was found to be r = 0.0696 was satisfactory.

PILOT STUDY

The pilot study was conducted in the Navamani Prabakar Hospital .The formal permission was obtained from the pediatrician and hospital administrator and informed consent from the mothers of the study samples were also obtained .The view of the study was to assess the feasibility and practicability. The study was carried out for the infants who fulfilled the inclusion criteria, totally 10 samples were selected, among this 5 samples for experimental group and 5 samples for control group. The samples in the experimental group were given 3ml of oral sucrose solution before IM injection. For control group no intervention given .The pain level was assessed after administration of IM injection for both experimental group and control group .The subject included in the pilot study was not included for the main study.

DATA COLLECTION PROCEDURE

The researcher obtained formal permission from Dr.Navamani Prabakar hospital to conduct this study after approval from the dissertation committee of Matha College of Nursing, Manamadurai. And informed consent obtained from the mothers of study samples.

The main study was conducted for 6 weeks .The time scheduled for a period data collection was 8.30 am to 3pm .Totally 100 samples were selected by purposive sampling who fulfilled inclusion criteria .Among that 50 samples for experimental group, 50 for control group .The time taken to collect the data of each sample in experimental group is approximately 30 minutes. The data collection include collecting demographic data and to administer oral sucrose solution before IM injection and then to assess the level of pain with FLACC behavioral pain scale after IM injection .The same procedure was carried out without intervention for control group. So a total 50 samples for experimental group were covered in first 3 weeks and 50 samples for control group were covered in next 3 weeks.

DATA ANALYSIS

The data was collected, analyzed and tabulated on the basis of objectives and hypothesis of the study. By using descriptive and inferential statistics such as mean, Standard deviation , frequency percentage, Chi – square "t" Test were used to assess the level of pain among infant both in experimental and control group.

THE EFFECTIVENESS

Data analysis	Methods	Remarks
Descriptive	Mean, Mean % & Standard deviation	Determination of demographic variable, Assessed the effectiveness of oral sucrose among

		experimental and control group
Inferential analysis	Paired ‘t’ test	Compare the post test effectiveness of oral sucrose administration in pain reduction among experimental and control group
	Chi- square	Association between the pain level in selected demographic valuable, among control and experimental group
	Correlation KarlPearson’s Correlation	Used to find out the relationship between oral sucrose and pain reduction

PROTECTION OF HUMAN RIGHTS

The study was done after the approval of dissertation committee. Formal permission was obtained from the medical officer in Navamani Pediatric Hospital. Verbal consent was obtained from the mothers and data collected were kept confidential .

ANALYSIS AND INTERPRETATION

ANALYSIS AND INTERPRETATION

This chapter deals with the statistical analysis. This is a meaningful and intelligible manner. Statistical procedure enables the researcher to organize, analyze, evaluate, interpret and communicate numerical information meaningfully.

Abdella and Levine (1979) have stated that the interpretation of the tabulated data can be bring to light the real meaning of the findings of the study. The data collected were analyzed and interpreted by using descriptive and inferential statistics. According to the objectives.

OBJECTIVES OF THE STUDY

- To assess the level of pain after administration of oral sucrose after IM injection among the infants in the experimental group.
- To assess the level of pain after administration of IM injection among infants in control group.
- To compare the pain scores level between experimental and control group.
- To find out the association between pain level in selected demographic variables like age, sex, weight, type of injection, type of feeding in the experimental group.
- To find the association between pain level in selected demographic variables such as age, sex, weight, type of injection, type of feeding in the control group.

PRESENTATION OF DATA

The collected data were organized, tabulated, analyzed and presented under VIII headings

SECTION: I

Frequency and percentage distribution of demographic variables of Experimental group.

SECTION II

Frequency and percentage distribution of Demographic variables of control group.

SECTION: III

Level of pain after administration of oral sucrose after IM injection, among infants.

SECTION: IV

Level of pain after administration of IM Injection.

SECTION: V

Compare the pain score level between experimental and control group.

SECTION: VI

Association between pain level in selected demographic variables like age , sex, weight , type of injection, and the type of feeding in the experimental group.

SECTION: VII

Association between pain level in selected demographic variables like age, sex, weight, type of injection and the type of feeding in the control group.

SECTION I

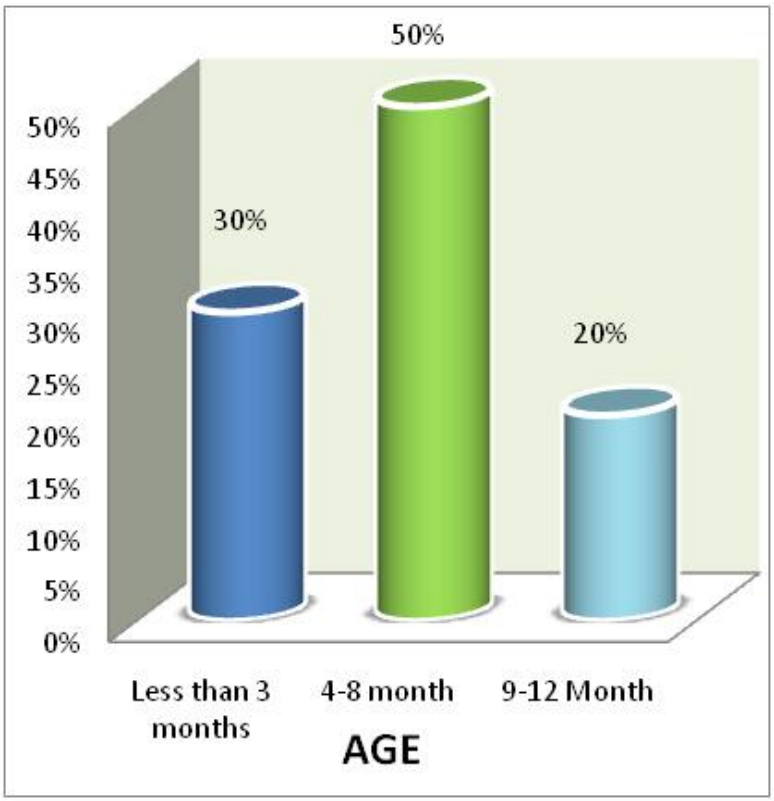
❖ **Frequency and percentage distribution of demographic variables of Experimental group**

TABLES -1

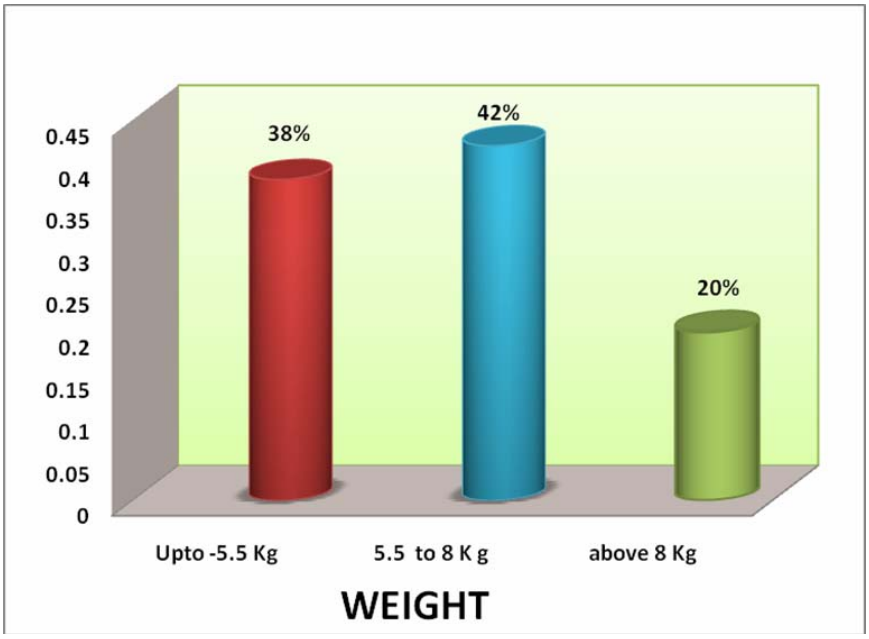
S. NO	DEMOGRAPHIC VARIABLES	FREQUENCY	PERCENTAGE
1..	AGE OF THE CHILD		
	Less than 3 months	15	30
	4-8 month	25	50
	9-12 Month	10	20
	Total	50	100
2.	WEIGHT		
	Upto -5.5 Kg	19	38
	5.5 to 8 K g	21	42
	Above 8 Kg	10	20
	Total	50	100
3.	TYPE OF INJECTION		
	Antibiotics	35	70
	Analgesic	2	04
	Antipyretic	13	26
	Total	50	100
4.	TYPE OF FEED		
	Breast feed	19	38
	Artificial feed	17	34
	Weaning food	14	28
	Total	50	100
5.	SEX		
	Female	25	50
	Male	25	50
	Total	50	100

- The above table:1 shows that regarding age, 30.00% (15) were less than 3 month, 50.00% (25)were 4-8 months, 20.00% (10) were 9-12 month.
- Regarding weight 38.00%(19) were up to 5.5Kg, 42.00% (21) were 5.5-8 Kg,20.00% (10) were above 8kg.
- Regarding type of injection 70.00% (35)received antibiotics, 04.00(2) received analgesics, 26.00%(13) received antipyretics.
- Regarding type of feeding 38.00% (19) were breast feed child, 34.00 % (17) were Artificial feed, 28.00%(14) were weaning food childen.
- Regarding sex 50% (25) were female children, 50% (25) were male children.

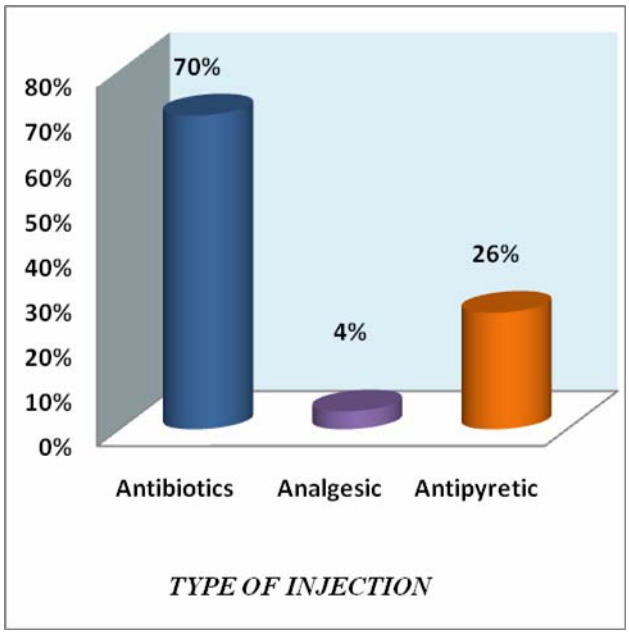
DISTRIBUTIONS OF DEMOGRAPHIC VARIABLES OF THE SAMPLE ACCORDING TO AGE (EXPERIMENTAL GROUP)



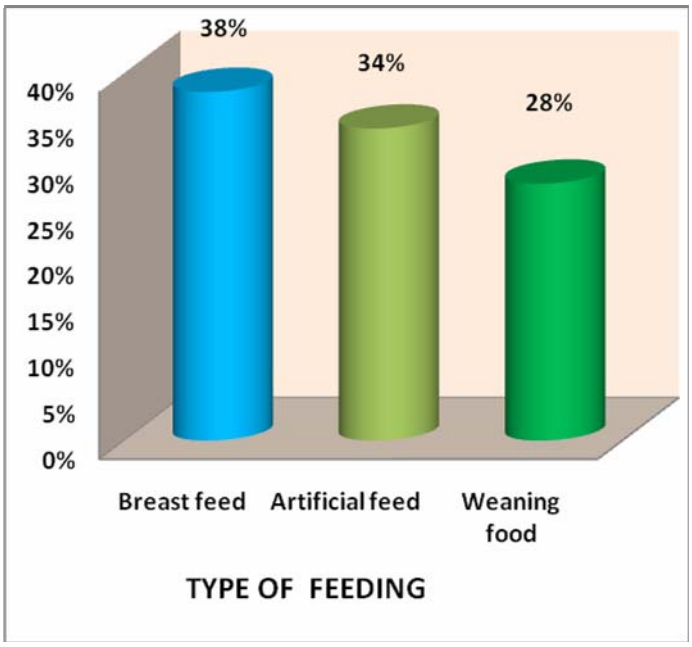
DISTRIBUTIONS OF DEMOGRAPHIC VARIABLES OF THE SAMPLE ACCORDING TO WEIGHT (EXPERIMENTAL GROUP)



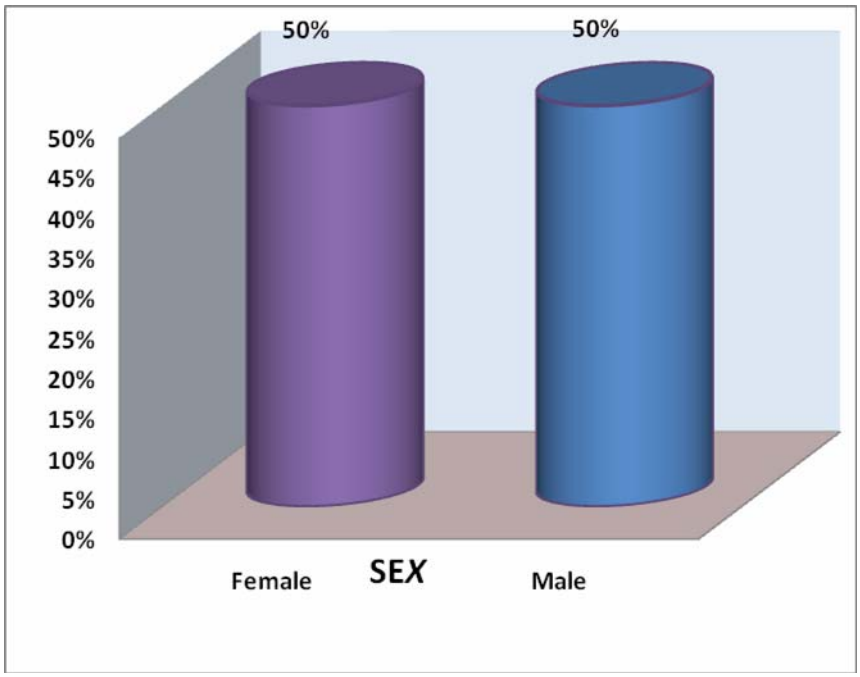
DISTRIBUTIONS OF DEMOGRAPHIC VARIABLES OF THE SAMPLEACCORDING TO THE TYPE OF INJECTION (EXPERIMENTAL GROUP)



DISTRIBUTIONS OF DEMOGRAPHIC VARIABLES OF THE SAMPLE ACCORDING TO THE TYPE OF FEEDING (EXPERIMENTAL GROUP)



DISTRIBUTIONS OF DEMOGRAPHIC VARIABLES OF THE SAMPLE ACCORDING TO THE SEX (EXPERIMENTAL GROUP)



SECTION II

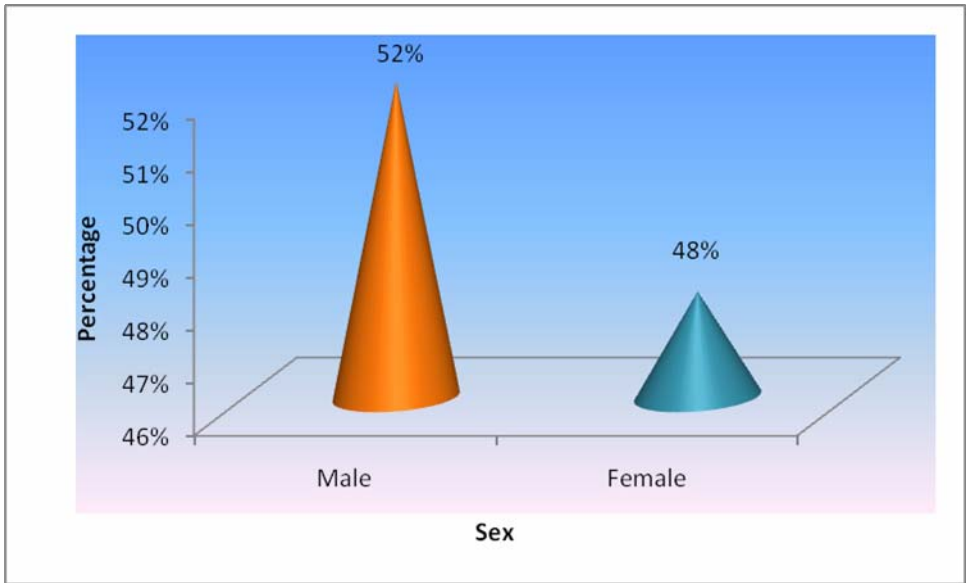
Frequency and Percentage Distribution of Sample Characteristics, of Control Group

TABLE- 2 **N = 50**

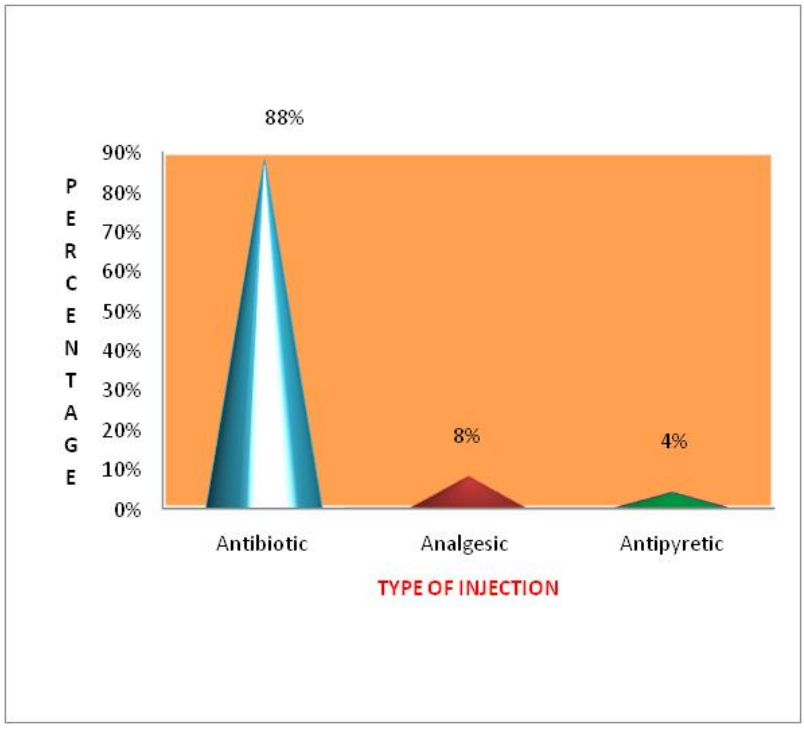
S. NO	DEMOGRAPHIC VARIABLES	FREQUENCY	PERCENTAGE %
1.	AGE OF THE CHILD		
	Less than 3 months	20	40
	4-8 month	19	28
	9-12 Month	11	22
	Total	50	100
2.	WEIGHT		
	Upto -5.5 Kg	21	42
	5.5 to 8 K g	18	36
	Above 8 Kg	11	22
	Total	50	100
3.	TYPE OF INJECTION		
	Antibiotics	44	88
	Analgesic	4	08
	Antipyretic	2	04
	Total	50	100
4.	TYPE OF FEED		
	Breast feed	21	42
	Artificial feed	5	10
	Weaning food	24	48
	Total	50	100
5.	SEX		
	Female	24	48
	Male	26	52
	Total	50	100

- The above table :2 shows that regarding sex, majority 52.00% (26) children were male, 48.00% (24) were female children.
- 88.00%(44) received antibiotics,08.00%(4) received analgesic , 4.00%(2) receive antipyretic .
- Regarding type of feeding 42.00%(21) were in breast feeding, 10.00%(5) were in artificial feeding, 48.00%(24) were in weaning food .
- Regarding Age 40.00% (20) were less than 3 months , 38.00%(19) were 4-8 months , 22.00%(11) were 9-12 Months
- Regarding weight 42.00%(21) were up to 5.5Kg, 36.00% (18) were 5.5-8 Kg , 22.00% (11) were above 8 kg.

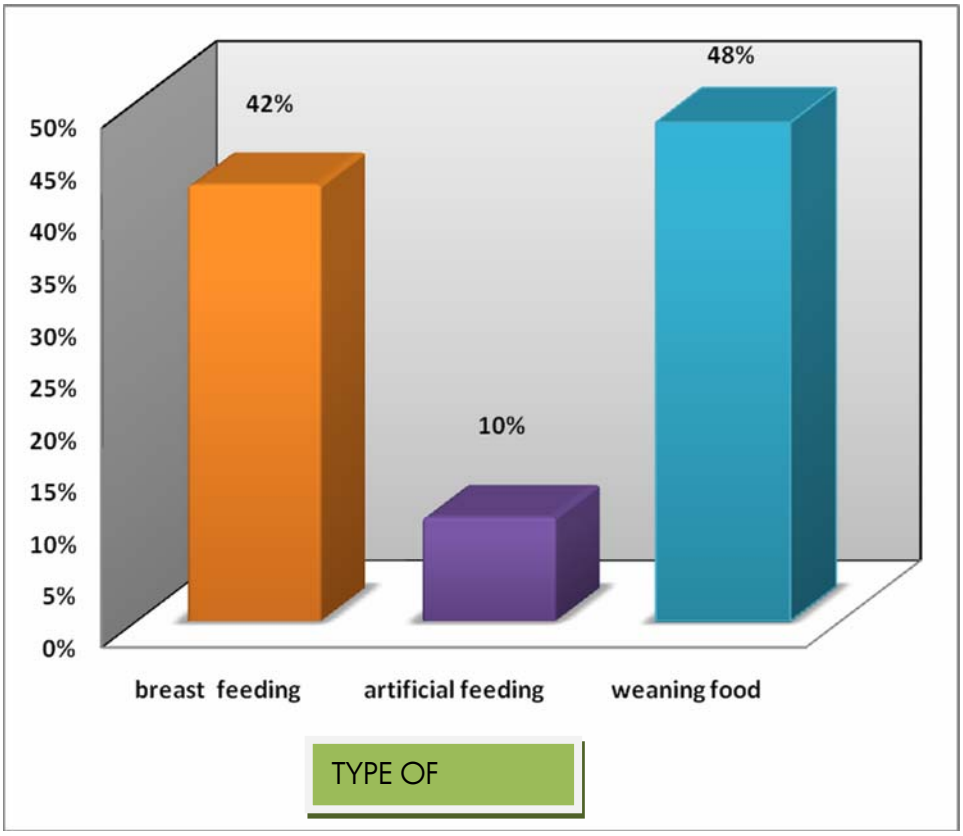
FREQUENCY DISTRIBUTIONS OF THE SAMPLE ACCORDING TO THE SEX (CONTROL GROUP)



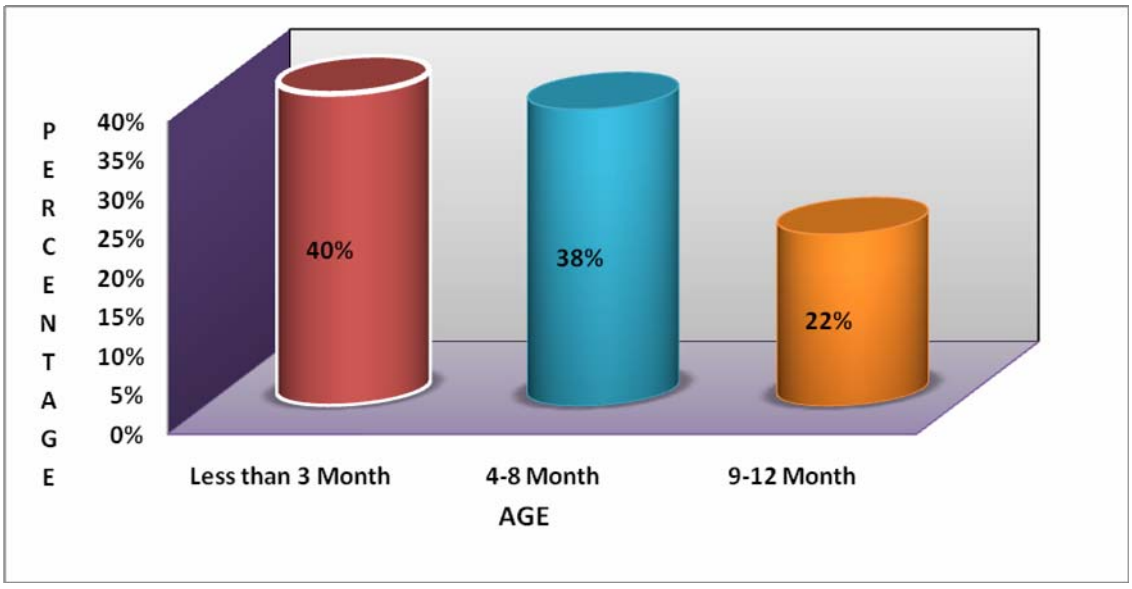
FREQUENCY DISTRIBUTION OF THE SAMPLE ACCORDING TO THE TYPE OF INJECTION



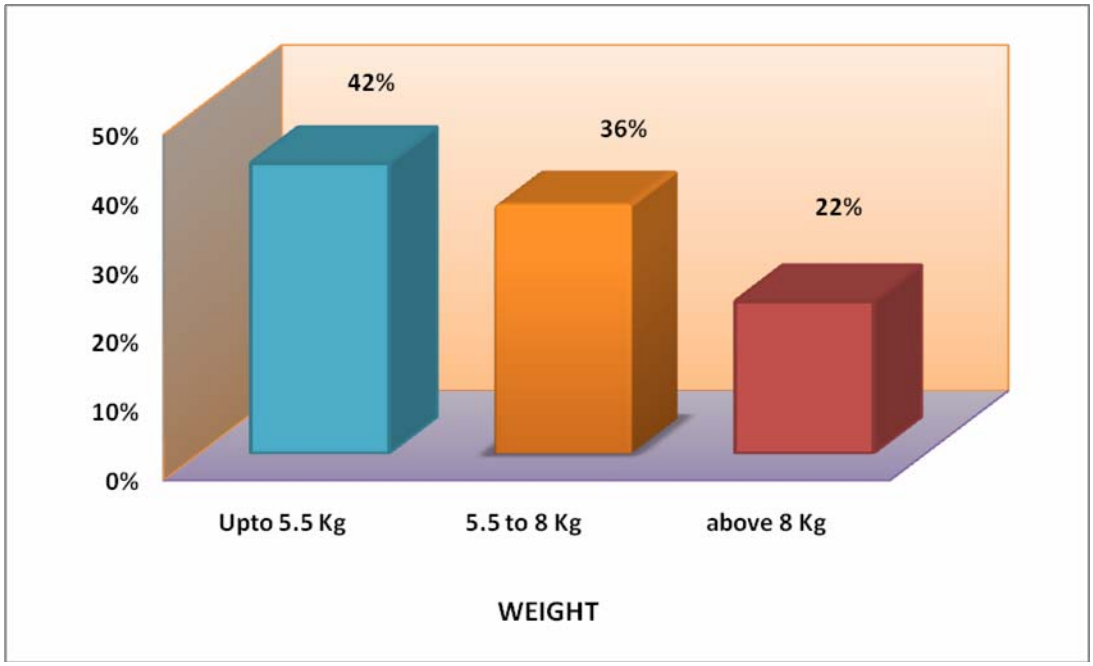
FREQUENCY DISTRIBUTION OF THE SAMPLE ACCORDING TO THE TYPE FEEDING



FREQUENCY DISTRIBUTION OF THE SAMPLE ACCORDING TO THE AGE



FREQUENCY DISTRIBUTION OF THE SAMPLE ACCORDING TO THE WEIGHT



SECTION – III

Distribution of samples based on the Level of pain among infants in experimental group

TABLE- 3

Pain Level	***Frequency***	***Percentage %***
Mild	12	24
Moderate	38	76

Table 3 shows that, the majority 76% (38) of children experienced moderate level of pain,24%(12) of children experienced mild level of pain.

SECTION – IV

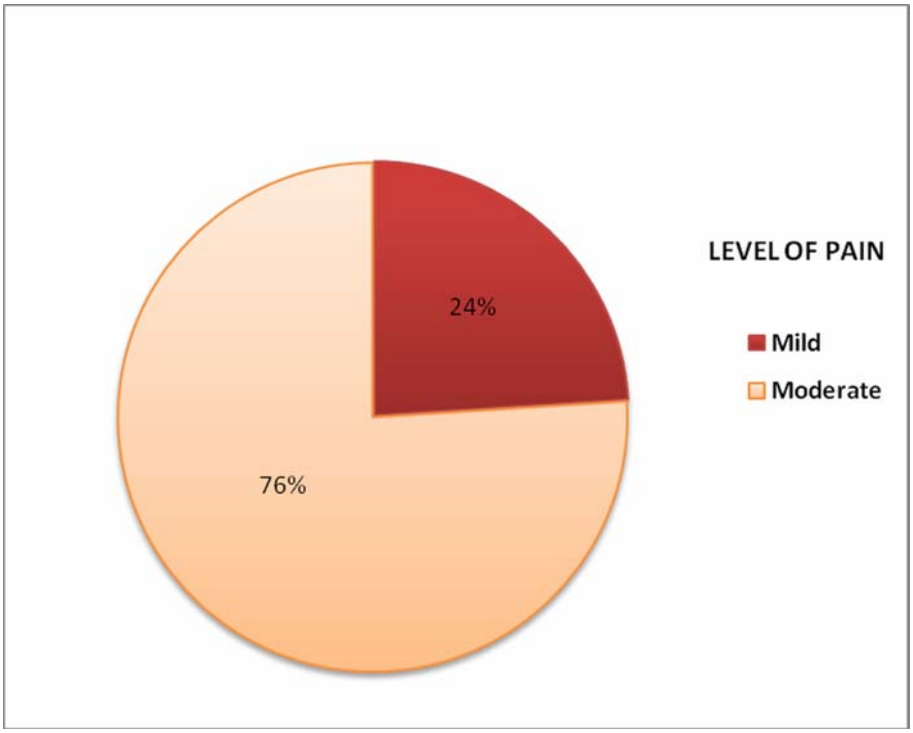
Distribution of samples based on the level of pain among infants in control group

TABLE - 4

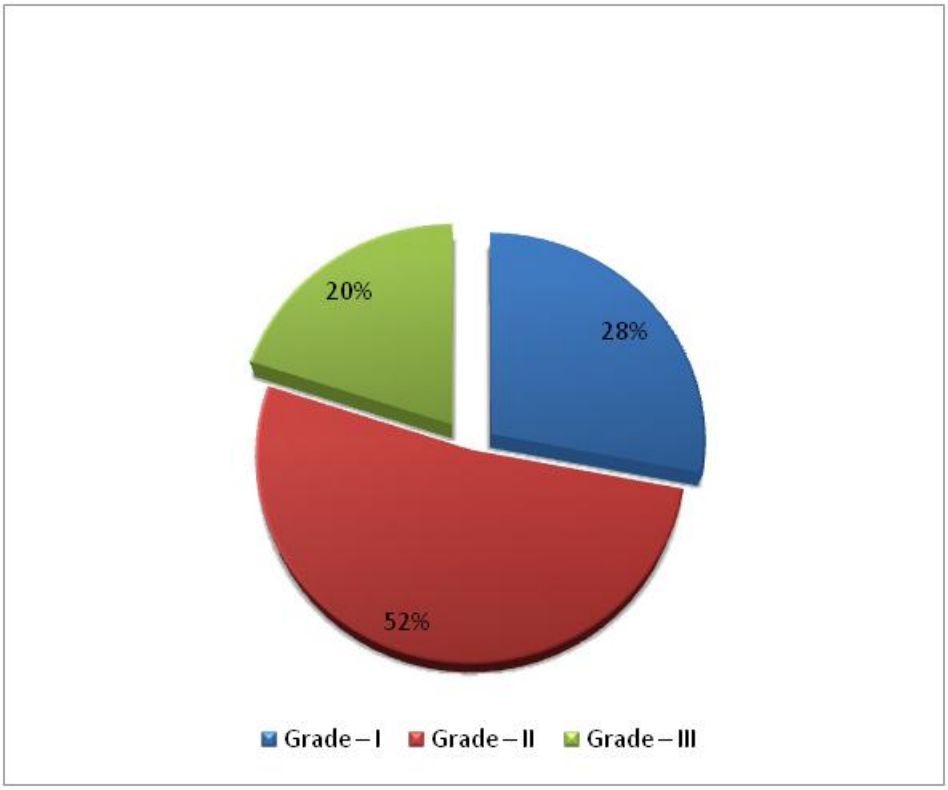
Pain Level	***Frequency***	***Percentage %***
Severe pain Grade – I	14	28
Severe pain Grade – II	26	52
Severe pain Grade – III	10	20

The table 4 shows that majority 52% (26) of children experienced grade II of severe pain, 28% (14) of children experienced grade I of severe pain, 20% (10) children experienced grade III of severe pain.

DISTRIBUTION OF SAMPLES BASED ON THE LEVEL OF PAIN AMONG INFANTS IN EXPERIMENTAL GROUP



DISTRIBUTION OF SAMPLES BASED ON THE LEVEL OF PAIN AMONG IN FANTS IN CONTROL GROUP



SECTION – V

Evaluate the mean pain score level between experimental & control group

TABLE-5

Group	***Mean***	***Standard deviation***	***'t' value***
Experimental Group	4.5200	1.129	*17.140
Control Group	8.3400	1.099	

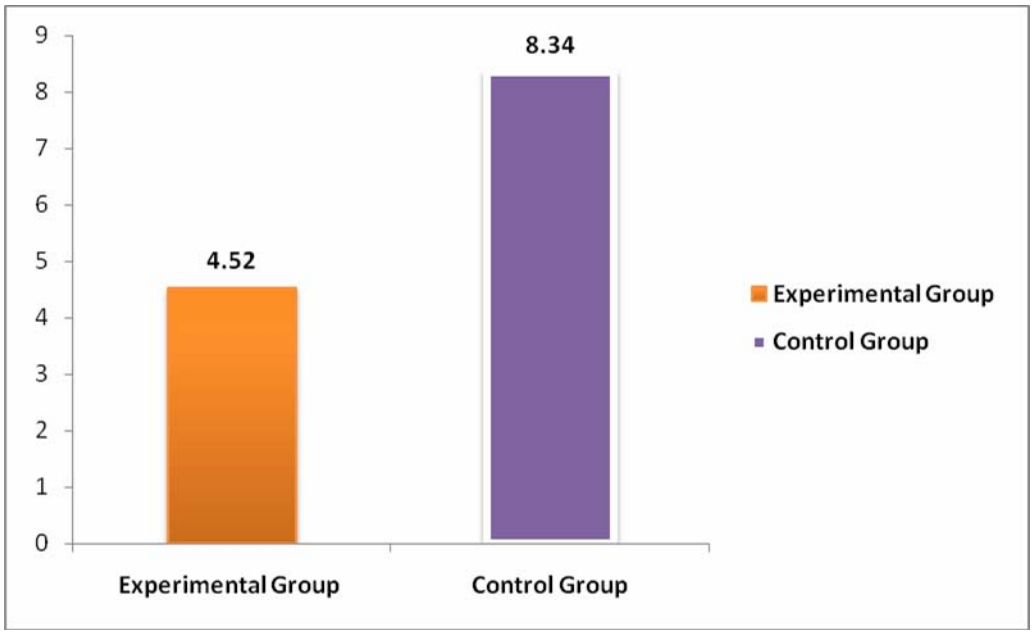
*Significance

The level of significance 0.05 level = 2.04

Table – 5 Shows the effectiveness of oral sucrose solution in pain reduction among experimental and control group. The mean value of Experimental Group is 4.52 and mean value of Control Group is 8.34 , The 't' test value is 17.140 which is highly significant. The effectiveness of oral sucrose is evident to reduce the pain during IM injection.

MEAN PAIN SCORE LEVEL BETWEEN EXPERIMENTAL AND CONTROL GROUP

TABLE-5



SECTION – VI

Association between pain level in selected demographic variables in the experimental group.

TABLE -6

S. NO	DEMOGRAPHIC VARIABLES	PAINLEVEL				χ^2 CHISQUARE VALUE
		MILD	%	MODERATE	%	
1.	AGE OF THE CHILD (n=50)					
	Less than 3 months	7	14	8	16	*6.177
	4-8 months	4	8	21	42	
	9-12 Months	1	2	9	18	
	Total	12	24	38	76	
2.	WEIGHT (n=50)					
	Upto -5.5 Kg	10	20	9	18	
	5.5 to 8 K g	2	4	19	38	*14.110
	Above 8 Kg	0	0	10	20	
	Total	12	24	38	76	
3.	TYPE OF INJECTION (n=50)					
	Antibiotics	12	24	23	46	*6.767
	Analgesic	0	0	2	4	
	Antipyretic	0	0	13	26	
	Total	12	24	38	76	
4.	TYPE OF FEED (n=50)					
	Breast feed	1	2	18	36	
	Artificial feed	11	22	6	12	*23.521
	Weaning food	0	0	14	28	
	Total	12	24	38	76	
5.	SEX					
	Female	6	12	19	38	#.000
	Male	6	12	19	38	
	Total	12	24	38	76	

Note: * Highly significance
Non significance

Table : 6 shows that there is a association between pain level in selected demographic variables such as age, weight , type of injection, type of feedings , but there was no significant association between pain level and other demographic variables such as sex .

SECTION – VII

Association between pain level in selected demographic variables in the control group

TABLE - 7

S. NO	DEMOGRAPHIC VARIABLES		PAINLEVEL					χ^2
		GRADE I	%	GRADE II	%	GRADE III	%	CHISQURE VALUE
1.	AGE OF THE CHILD(n=50)							
	Less than 3 months	7	14	10	20	3	6	
	4-8 months	3	6	12	24	4	8	#3.175
	9-12 Months	4	8	4	8	3	6	
	Total	14	28	26	52	26	20	
2.	WEIGHT (n=50)							
	Upto -5.5 Kg	7	14	11	22	3	6	
	5.5 to 8 K g	2	4	12	24	4	8	#5.961
	Above 8 Kg	5	10	3	6	3	6	
	Total	14	28	26	52	26	20	
3.	TYPE OF INJECTION (n=50)							
	Antibiotics	14	28	21	42	9	18	
	Analgesic	0	0	4	8	0	0	#5.542
	Antipyretic	0	0	1	2	1	2	
	Total	14	28	26	52	26	20	
4.	TYPE OF FEED (n=50)							
	Breast feed	7	14	11	22	3	6	
	Artificial feed	0	0	5	10	0	0	#6.685
	Weaning food	7	14	10	20	7	14	
	Total	14	28	26	52	26	20	
5.	SEX (n=50)							
	Female	5	10	14	28	7	14	#2.821
	Male	9	18	12	24	3	6	
	Total	14	28	26	52	26	20	

Note: * Highly significance
Non significance

Table : 7 shows that there is no significant association between pain level in selected demographic variables such a age , sex, weight , type of injection , type of feedings .

DISCUSSION

DISCUSSION

The aim of the study is to determine the effectiveness of oral sucrose for pain reduction among infants who received Intra-muscular injection in the select pediatric hospital at Madurai. A quantitative research approach was used, and post test only control group design was used. The setting of the study is Navamani Prabakar Pediatric Hospital. The total sample were 100; 50 samples for experimental group,50 samples for control group .The findings of the study were discussed with reference to the objectives, the frame work and hypothesis of the study.

OBJECTIVES WERE:

- To assess the level of pain after administration of oral sucrose after Intra-Muscular Injection among the infants in the experimental group.
- To assess the level of pain after administration of Intra-Muscular Injection among infants in the control group.
- To compare the pain score level between experimental and control group.
- To find out the association between pain reduction level in selected demographic variables in the experimental group.
- To find out the association between pain level in selected demographic variables in the control group.

I: To assess the level of pain after administration of oral sucrose after Intra-Muscular Injection among the infants in the experimental group

Table 3: The study result show that 24%(12) of children experienced mild pain and 76% (38) of children experienced moderate pain. This result was supported by:

Taddio.A..et.al(2008) conducted a study on effectiveness of sucrose analgesia in new born undergoing painful medical procedure. They included new born(>or=36 weeks gestation) of Diabetic mother and non Diabetic mothers was assessed pain during IM injection , venipucture,I 3 heel lance. The mean pain score was lower among new born who received sucrose than among those who received a placebo (mean difference –1.3,95%,confident interval (CI)-2.0 to =0.6)in IM injection and venipunture only infants of no diabetic mothers. There they found a modest reduction of pain in newborn of Diabetic mother and non Diabetic mothers when sucrose was used for all medical procedures performed in first 2 days after birth.

II:To assess the level of pain after administration of Intra-Muscular injection among infants in control group-

Table:4 The study result shows that 14(28%) of children experienced Grade I severe pain, (52%) 26 children experienced Grade II severe pain, 10 (20%) children experienced Grade III severe pain.

III: To compare the pain score level between experimental and control group

Researcher formulated the null hypothesis to prove the research hypothesis.

H_o :-There is no significant difference in pain score level between experimental and control group.

H_1 :- There is a significant difference in pain score level between experimental and control group.

Table 3: The study result shows that the mean value of experimental group is (4.52) standard deviation (1.129) and mean value of control group is (8.34), standard deviation (1.09). The study result shows that the score of Experimental and control group was compared by 't' test for statistical analysis. The 't' value is (17.140).This value is higher at significant of 0.05 level. Hence the researcher rejects the null hypothesis and accepts the research hypothesis .This result was supported by:

Maryapriya (2006) conducted a study to assess the effectiveness of oral sucrose solution for pain reduction. In infants during Intra-Muscular Injection in hospital, Jawaharlal Nehru hospital. The study reveals that the obtained 't' value was 15.47 ($P<0.005$) was significant, therefore null hypothesis rejected and research hypothesis is accepted.

IV: To find out the association between pain level and selected demographic variables in the experimental group

The chi-square (χ^2) was used to find out the association between pain in selected demographic variables. The results shows there will be a significant association between pain level in selected demographic variables such as age (χ^2=6.177), weight (χ^2=14.110), Type of injection (χ^2=6.767), Type of feeding (χ^2=23.521). The obtained Chi-square value is more than that of tabulated value.

There is no significance association between pain level in selected demographic variables such as sex (χ^2=.000). So the obtained Chi-square value is less than table value at 0.05 level, Show no significant association between pain level and selected demographic variables with regard to the sex and pain, no association exist. This shows that there is no gender influence in pain perception in young children.

Good enough et.al, conducted a similar study. He suggests that no sex difference exists in young children's ratings of pain intensity and unpleasantness. This study findings supported the present study result.

V: To find out the association between pain level and selected demographic variables in control group

The result shows that there is no significant association between pain levels in selected demographic variables. Such as age (χ^2=3.175), sex (χ^2=2.821), weight (χ^2=5.961), Type of injection (χ^2=5.542), Type of feeding (χ^2=6.685), so the chi-square value is more than that of tabulated value.

SUMMARY, FINDINGS, CONCLUSION, IMPLICATION AND RECOMMENDATION

SUMMARY, IMPLICATION, RECOMMENDATION AND CONCLUSION

SUMMARY:

The study was conducted to determine the effectiveness of oral sucrose for pain reduction among infants who receive intra muscular injection in the select pediatric hospital in Madurai .A review of related literature enabled the researcher to develop conceptual frame work and methodology.

The conceptual frame work adopted for this study was based on Roy's adaptation theory. In this model there is input, throughput, output (or) evaluation. So here the input contains painful stimuli and demographic variables of both experimental and control group. In this throughput (or) intervention to reduce the pain, 3ml of oral sucrose solution for experimental group and no intervention for control group. With the help of FLACC behavioral pain scale, pain was assessed both in experimental group and control group.

The quantitative research approach was adopted to conduct the study. A quasi-experimental design was adopted to determine the effectiveness of oral sucrose in pain reduction among infants .The sampling technique used for this study was purposive or convenient sampling .The setting of the study was Navamani prabakar pediatric hospital .The sample size was 100 infants, in that 50 samples for control group and 50 sample for experimental group who met the inclusion criteria. The tool selected for this study is,

Part I: consisted of demographic variable details

Part II: consisted of standardized FLACC behavioral pain assessment tool

MAJOR FINDINGS OF THE STUDY:

The study findings show that:

- Majority (76%)38 children experienced moderate level of Pain,(24%)12 experienced mild level of pain in the experimental group.
- (52%)26 children experienced grade I level of severe pain,(28%)14 experienced grade II level of severe pain ,(20%)10 children experienced grade III level of pain
- The‘t’ test value is 17.140,shows the effectiveness of oral sucrose in pain reduction among infants, in experimental group and control group .It is highly significant.
- There is a significant association between pain level and demographic variables. The chi-square value for age (*6.177),weight(*14.110),type of injection(*6.767),type of feeding(*23.521)

IMPLICATIONS:

The findings of the study have implications in various areas of nursing and nursing practice, nursing education, nursing administration, nursing research.

IMPLICATIONS FOR NURSING PRACTICE:

- Nurse’s role in the health care arena is under going rapid changes. Nurses play a pivotal role in management of pain in both hospital as well as community setting.
- Nurse must provide care with a holistic approach.

- Pain assessment should be a part of the child's care plan .Hence nurses should assess the pain of the children ,according to their age and developmental level based on the standardized pain assessment tool.
- Oral sucrose can be used effectively to block the pain path way in young infants and neonates, so the nurse should effectively use this measure to alleviate pain during IM injection for neonates and young infants.
- Nursing personnel can use oral sucrose solution to reduce pain during various painful procedures among infants.
- The nurses should practice the non- pharmacological pain reduction technique like behavioral method, distraction technique ,guided imaginary ,hypnosis, specific stress reducing counseling are all helpful in the management of pain among children.
- Oral sucrose solution also can be used as analgesic and reduce the chance of breath holding spells due to cry.
- The nurses should be taught how to prepare oral sucrose solution in a sterile manner.

IMPLICATION FOR NURSING EDUCATION:

- Pain has been considered as the fifth vital sign comprehensive assessment of pain in infants and children are assessed through various standardized scale like numeric pain scale, FLACC behavioral pain scale, ouches face scale ,this should be insisted to all nursing students.
- Conduct group teaching for students regarding pain reduction with oral sucrose solution and other non pharmacological technique. while taking care of children.

- Education helps nursing students to develop more insight on new concepts, which will enable them to take care of children effectively.
- Teach the nursing students how to prepare and administer oral sucrose solution before IM injection for infants and neonates and also teach them to use various pain scale effectively in clinical setting.
- Education on pain management is a basic need of nursing students, which is existing in the curriculum and it should be given more important. So that the students can manage pain effectively in various age groups of children.

IMPLICATION FOR NURSING ADMINISTRATION:

- In-service education should be provided to the nursing personnel at various levels, to make them aware of simple and effective pain relieving measures and distraction techniques.
- Update the nurse's knowledge about current practice and treatment through workshops and conferences .This will enable them to provide care effectively with holistic approach.
- Administration of oral sucrose to infants can be insisted as one of the responsibilities of nursing personnel, while doing an invasive procedure to the neonates and infants.

IMPLICATION FOR NURSING RESEARCH:

- Though many studies are done in this concept in other countries such studies need to be undertaken in India also.
- Findings of the study can provide the baseline information for further research in this area.

- Oral sucrose solution may be studied more significantly and used as a specific nursing intervention.
- Large scale studies can be conducted in consideration of other contributing variables.

RECOMMENDATION FOR FURTHER RESEARCH:

- A similar study can be conducted during immunization.
- A similar study can be conducted in various settings like government hospital and PHC.
- A similar study can be done with large samples with different demographic variables.
- A similar study can be done during IV injection among neonates.
- Evaluation of pain after oral sucrose solution can be compared by using 2 different pain assessment scales among infants who received IM injection.
- A factorial design can be adopted by using different non pharmacological pain therapies or infants who had received IM injection.
- A study conducted by administering oral sucrose solution just after the prick.
- Validate FLACC tool against other pain assessment tools.

DELIMITATIONS OF THE STUDY:

I. Data collection period was limited to 6 weeks.
II. Variables like cuddling, the infants were restricted in between the observation, which was otherwise natured for mother.

CONCLUSION:

Pain is an unpleasant experience and the fifth vital sign which need to be assessed and managed appropriately. The perception of pain depends on anatomic, physiologic and cognitive behavioral factors .Most of the children express their pain by means of cry, restless, kicking or legs drawn up, rigid or jerking. So treating the pain is essential with the help of non- pharmacological technique such as oral sucrose administration, which is has the property of analgesic effect for the infant who are receiving intra-muscular injection or other invasive procedure. Other non pharmacological technique like guided imaginary ,hypnosis etc, are helpful to reduce pain perception among children. Number of studies proved that oral sucrose is effective in pain reduction among infants. So as nurses we have to reduce the pain by giving oral sucrose during painful procedure for neonates and infants as a pre procedural intervention.

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APPENDICES

DEMOGRAPHIC PERFOMA

SECTION :I

DEMOGRAPHIC VARABILES FOR EXPERIMENTAL GROUP AND CONTROL GROUP:

1. Age of the child

   a) Less than 3 month

   b) 4 to 8 month

   c) 9 to 12 month ( )

2. Weight

   a) Up to 5.5kg

   b) 5.5 to 8 kg

   c) Above 8 kg ( )

3. Type of injection

   a) Antibiotics

   b) Analgesic

   c) Antipyretics ( )

4. Type of feed

   a) Breast feed

   b) Artificial feed

   c) Weaning food ( )

5. **sex**

   a) Female

   b) Male ( )

SECTION: II

ASSESSMENT TOOL

FLACC BEHAVIOURAL PAIN

FLACC = Face, legs, Activity, Crying, Consolability tool

Scoring Key ; 0-3-mild,4-6-moderate7-10-severe

Category	Description	score
Face	0=No Particular expression or smile	0
	1=occasional grimace/frown/withdrawn or disinterested	1
	2= Frequent / Constant Quivering chin, clenched jaw	2
Legs	0=Normal position or relaxed	0
	1=uneasy, restless, tense	1
	2=kicking or legs drawn up	2
Activity	0=Lying quietly, Normal Position, moves easily	0
	1=squirming ,shifting back & forth ,tense	1
	2=Arched ,rigid or jerking	2
Cry	0=No cry	0
	1=Moans or whimpers ,occasional complaints	1
	2=crying steadily ,screams or sobs, frequent complaints	2
Consol ability	0=content & relaxed	0
	1=reassured by occasional ,touching, hugging Being talked to distractible	1
	2=Difficult to console or comfort	2

APPENDIX- II

LIST OF EXPERTS

DR. PRABHAKAR NAVAMANI M.D, DCH,
NAVAMANI CHILD SPECIALITY HOSPITAL,
MADURAI,
TAMIL NADU.

PROF. MRS.SUMITHA , M. Sc (N)
PRINCIPAL,HOD PEDIATRIC NURSING,
KARPAGA VINAYAGA COLLEGE OF NURSING,
J.J.NAGAR SIVAPURAM POST,
PUDU KKOTAI.

PROF. MRS. JEBAMANI AUGUSTINE M.Sc., (N) RN.RM,
PRINCIPAL, HOD MEDICAL SURGICAL NURSING,
MATHA COLLEGE OF NURSING,
MANA MADURAI.

PROF. MRS. SHABERA BANU, M.Sc., (N),
VICE PRINCIPAL, HOD MATERNITY NURSING,
MATHA COLLEGE OF NURSING,
MANA MADURAI.

PROF. MRS. KALAI GURU SELVI M.SC., (N),
VICE PRINCIPAL, HOD PEDIATRIC NURSING,
MATHA COLLEGE OF NURSING,
MANA MADURAI.

APPENDIX-(III)

LETTER SEEKING EXPERTS OPINION FOR CONTENT VALIDITY OF THE TOOL

FROM

Ms. J.Rajalakshmi
M.Sc (Nursing) II year,
Matha College of Nursing,
Manamadurai.

TO

Respected Madam/Sir,

Sub: Requesting opinion and suggestion of experts for content validity of tool.

I, Ms.J.RAJALAKSHMI, a final year Master Degree Nursing student, in Matha College of Nursing, Mana madurai. In partial fulfillment of Master Degree in Nursing, I have selected the topic mentioned below for the research project to be submitted to the Tamilnadu Dr.M.G.R.Medical University, Chennai.

"A comparative study to determine the effectiveness of oral sucrose for pain reduction among infants who receive intra-muscular injection in the selected pediatric hospital in Madurai.''

I request you to kindly validate the tool and give your opinion for necessary modification and also I would be very grateful, if you could refine the problem statement and the objectives.

ENCLOSURES:

- Statement of the problem
- Objectives
- Hypothesis
- Research tool

Thanking you

Place: Manamadurai
Date:

Yours sincerely,

(Ms.J.Rajalakshmi)

APPENDIX-(IV)

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY AT

NAVAMANI PRAPAKAR PEDIATRIC HOSPITAL,IN MADURAI.

To

The medical officer,
Navamani Pediatric hospital,
Arasaradi,
Madurai.

Respected Sir

Sub: Project work of M.Sc (Nursing) student in Navamani Pediatric hospital, Madurai.

I am to state that Ms.J.RAJALAKSHMI, one of our final year M.Sc (Nursing) students, Matha College of Nursing, Manamadurai, has to conduct a project for the partial fulfillment of university requirements for the degree of Master of Science in Nursing.

The topic of study is **"A comparative study to determine the effectiveness of oral sucrose for pain reduction among infants who receive intra-muscular injection in the selected pediatric hospital in Madurai.''**

Kindly permit her to do the research work in your esteemed institution under your valuable guidance and suggestion.

Thanking you

Place: Manamadurai Yours Sincerely,

Date:

Prof. (Mrs.). Jebamani Augustine, M.Sc (N)
Principal